



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/082,737 | 02/25/2002 | Juergen Dirks | 01-158 1496.00186 | 4705 |
| 24319 | 7590 | 02/23/2005 | EXAMINER | |
| LSI LOGIC CORPORATION 1621 BARBER LANE MS: D-106 MILPITAS, CA 95035 | | | TRIMMINGS, JOHN P | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2133 | |

DATE MAILED: 02/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/082,737 | DIRKS ET AL. | |
| | Examiner | Art Unit | |
| | John P Trimmings | 2133 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 11/15/2004.
 2a) This action is **FINAL**. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-4 and 6-20 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-4,6-11 and 18-20 is/are rejected.
 7) Claim(s) 12-17 is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on 11/15/2004 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office Action is in response to the applicant's amendment dated 11/15/2004.

Claims 1, 10 and 16 were amended by the applicant.

Claim 5 was canceled by the applicant without prejudice.

Claims 1-4 and 6-20 are pending.

Response to Amendment

1. In view of the applicant's changes to FIGS. 1 and 2, the examiner withdraws the objections to said figures and approves the changes.
2. In view of the applicant's amendment to Claim 16, the examiner withdraws the rejection of said claim under 35 USC 112 second paragraph.

Response to Arguments

3. Applicant's arguments with respect to Claims 1-4 and 6-10 have been considered but are moot in view of the new grounds of rejection. Applicant's amendment necessitated the new grounds of rejection presented in this Office Action.
4. Applicant's arguments filed 11/15/2004 in regard to Claim 11 and 18-20 have been fully considered but they are not persuasive.

As per Claim 11:

Firstly, the applicant argues that the examiner's rejection of Claim 11 has been obviated by amendment (page 9 paragraph 2 of amendment), but the applicant did not submit an amendment to this claim, therefore the argument is moot.

Art Unit: 2133

Secondly, the applicant argues that the citation by the examiner in Fisher does not disclose, "determining if a last I/O is connected" (page 9 paragraph 5), but the examiner disagrees. When Fisher stated that "at least one pad" was described in the netlist (column 9, lines 21-29), the examiner, as one with ordinary skill in the art, recognized that "one pad" being connected as cited may also be a "last pad" connected. Therefore, the examiner has maintained the rejection of Claim 11 under 35 USC 103.

As per Claims 18-20:

Inasmuch as the applicant has not presented an argument to Claims 18-20 other than being dependent on Claim 11, the examiner maintains the rejections of Claims 18-20 under 35 USC 103.

5. Applicant's arguments, see amendment, filed 11/15/2004, with respect to Claims 12-17 have been fully considered and are persuasive. The rejections under 35 USC 103 of Claims 12-17 have been withdrawn.

Claim Rejections - 35 USC § 103

6. Claims 1-4 and 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scheck, U.S. Patent No. 6381719, and in view of the applicant's prior art references in the Background of the Application, pages 1-3, and Figures 1 and 2, herein referred to as "PA". The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome either by a showing under 37 CFR 1.132 that any invention

disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

As per Claim 1:

Scheck teaches an apparatus comprising: one group of boundary scan cells (FIG.1); one group buffer (column 3 lines 45-47 and FIG.1 104) coupled to said group of boundary scan cells (FIG.1 112); one or more repeater buffers coupled in series with said group buffers (FIG.1 102A via buffer within input 112 to output 114); and a controller coupled to said group of boundary scan cells through said group buffer and said repeater buffer (FIG.1 104), wherein said apparatus is configured to buffer said groups of boundary scan cells to reflect an order of I/Os around said apparatus (Scheck FIG.4A u2, dout, and PA FIG.2 22a with 24a I/O), and said groups of boundary cells (PA FIG.2 24a) are routed within an I/O portion of said apparatus (PA FIG.2 24a I/O and PA page 2 lines 14-20 and page 3 lines 3-5) to avoid routing through an interior portion of said apparatus (see PA page 1 lines 19-20). Scheck in the Summary of the invention cited the advantage being a system where skew in boundary cells is minimized by reversing the clock distribution in relation to the scan data distribution. One with ordinary skill in the art at the time of the invention, motivated as suggested, would have found it obvious to apply the Scheck manner of clock and data distribution to the PA method of routing BS cells with the circuit I/O, and so the claim is rejected.

As per Claim 2:

Scheck further teaches the apparatus according to claim 1, wherein said

group of boundary scan cells comprise a scan chain (column 2 lines 57-59). And in view of the motivation previously stated, the claim is rejected.

As per Claim 3:

Scheck further teaches the apparatus according to claim 2 wherein said repeater buffers are configured to eliminate skew at the beginning pins and end pins of the scan chain (see Abstract). And in view of the motivation previously stated, the claim is rejected.

As per Claim 4:

Scheck further teaches the apparatus according to claim 1 wherein said apparatus further comprises: one or more boundary scan control nets configured to control said group of boundary scan cells (FIG.7 402). And in view of the motivation previously stated, the claim is rejected.

As per Claim 6:

The PA further teaches the apparatus according to claim 1, wherein each boundary scan cell of said group of boundary scan cells are implemented within an I/O cell (page 2 lines 14-20 and page 3 lines 3-5). And in view of the motivation previously stated, the claim is rejected.

As per Claim 7:

Scheck further teaches the apparatus according to claim 1, wherein said apparatus comprises a clock chain in a first direction and a data path in an opposite direction of said first direction (column 8 lines 21-25).

As per Claim 8:

Scheck further teaches the apparatus according to claim 1, wherein a scan connection of apparatus is controlled by a scan enable signal (FIG.4A shift and mode). And in view of the motivation previously stated, the claim is rejected.

As per Claim 9:

Scheck further teaches the apparatus according to claim 1, wherein said apparatus implements one or more flip flops, each configured to provide a scan enable output (FIG.4A dout using mode). And in view of the motivation previously stated, the claim is rejected.

As per Claim 10:

Scheck teaches an apparatus comprising: means for implementing one group of boundary scan cells (FIG.1); means for implementing one group buffer coupled to each one said groups of boundary scan cells (column 3 lines 45-47 and FIG.1 120); means for implementing one repeater buffer coupled in series with said group buffer (FIG.3 320); and means for controlling coupled to said groups of boundary scan cells through said group buffer and said and repeater buffers (FIG.7 402); means for buffering said groups of boundary scan cells to reflect an order of I/Os around said apparatus (Scheck FIG.4A u2, dout, and PA FIG.2 22a with 24a I/O), wherein said groups of boundary cells (PA FIG.2 24a) are routed within an I/O portion of said apparatus (PA FIG.2 24a I/O and PA page 2 lines 14-20 and page 3 lines 3-5) to avoid routing through an interior portion of said apparatus (see PA page 1 lines 19-20).

7. Claims 12-17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

The following status of the applicant's claims is as follows:

Claims 1-4 and 6-10 are newly rejected based on new art under 35 USC 103.

Claims 11 and 18-20 are maintained as rejected under 35 USC 103.

Claims 12-17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

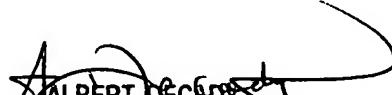
Any inquiry concerning this communication or earlier communications from the examiner should be directed to John P Trimmings whose telephone number is (703) 272-3830. The examiner can normally be reached on Monday through Thursday, 7:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert DeCady can be reached on (703) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


John P Trimmings
Examiner
Art Unit 2133

jpt


ALBERT DECADY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100